

In the Dr. Gehring and Dr. Kerlinger Michigan study Reports filed in this NPRM, the researchers documented mortality at more than one-half of the 24 towers that were randomly selected to be studied in the Michigan tower study, which further documents that when examined, most communication towers are shown to kill birds.

Dr. Gehring and Dr. Kerlinger in their Report I note at the outset that “Avian fatalities have been documented at communication towers for more than 55 years (Aronoff 1949, Bernard 1966, Avery et al. 1980, Shire et al. 2000, Kerlinger 2000). Past research suggests that birds, primarily night migrating songbirds, collide with towers of varying heights, especially when night skies are overcast, foggy, or when there is precipitation (Caldwell and Wallace 1966, Avery et al. 1976, Larkin and Frase 1988, Kruse 1996). Large-scale events involving dozens to hundreds of birds have been recorded during inclement weather. However, birds also collide with towers or guy wires on clear nights. It is believed that large numbers of night migrants can be attracted to or disoriented by the lights of tall structures, such as communication towers (Larkin 2000), resulting in collisions. Banks (1979) estimated that 1.25 million birds per year collided with communication towers, although a recent estimate cites 4-5 million or more birds per year (Manville 2001, Kerlinger 2000). Banks’ estimates were derived from sporadic studies at eight guyed towers >800 feet Above Ground Level (AGL). Some of the studies available to Banks recorded thousands of birds colliding with individual towers during a single night of migration (Breckenridge 1958, Bernard 1966, Kemper 1964). Shire et al. (2000) compiled documented cases of bird mortalities at about 50 tall guyed communication towers in the U.S. and tallied about 230 species.”

While the exact number of birds killed at towers is not known, we do know from the best science and documentation available, that at least 4 million birds annually are killed at towers under FCC jurisdiction. For literature review compilations on the number and species of birds killed at towers see:

Shire, G.G., K. Brown, and G. Winegrad. 2000. *Communication towers: a deadly hazard to birds*. American Bird Conservancy, Washington, D.C. Weir, R.D. 1976; *Annotated bibliography of bird kills at man-made obstacles: a review of the state of the art and solutions*. Department of Fisheries and the Environment, Environmental Management Service, Canadian Wildlife Service, Ontario Region, Ottawa; and Avery, M.L., P.F. Springer, and N.S. Dailey. 1980. *Avian mortality at man-made structures: an annotated bibliography* (revised). FWS/OBS-80-54. U.S. Fish and Wildlife Service, Washington, D.C.

As further examples of the peer reviewed documentation of avian mortality and the species affected at individual towers, we again cite:

1) a 38-year study of a single 1,000-foot television tower in west central Wisconsin that documented 121,560 birds killed representing 123 species. *A Study of Bird Mortality at a West Central Wisconsin TV Tower from 1957-1995*, by Dr. Charles Kemper, The Passenger Pigeon, Vol. 58, No. 3, Pp. 219-235 (1996); and

2) a 29-year study at a Florida television tower documented the killing of more than 44,000 birds of 186 species. *Characteristics of Avian Mortality at a North Florida*

Television Tower: A 29-year Study, Robert L. Crawford and R. Todd Engstrom, Journal of Field Ornithology: Vol. 72, No. 3, pp.380-388, (2001).

The fatalities reported in these latter two studies are not upwardly adjusted for predator removal or searcher efficiency, so the numbers of birds killed were higher than reported. These studies and many of the other studies cited are not anecdotal, and confirm what all other such studies document: the species of birds killed at towers are not evenly and randomly distributed. Most all birds killed at towers-- 90% to 94% in these studies--are neotropical, migratory birds, with nearly all of these species night migrants. A significant proportion of bird kills occur in the fall migration, and the next greatest mortality occurs during the spring migration, with many fewer birds killed at other times of the year.

At a 1999 Avian Mortality at Communication Towers Symposium at Cornell University, two scientists at the Tall Timbers Research Station in Florida and the authors of the Journal of Field Ornithology article above (Robert L. Crawford and R. Todd Engstrom) stated: "We feel that R. D. Weir's 1976 quote still sums up the state of knowledge about these events: 'Nocturnal bird kills are virtually certain wherever an obstacle extends into the air space where birds are flying in migration. The time of year, siting, height, lighting, and cross sectional area of the obstacle and weather conditions will determine the magnitude of the kill'".

The Avatar Report, commissioned by the FCC, documents and finds that "Overall, there is general agreement that there is sufficient documented evidence of avian mortality by communication towers and that the construction and operation of tall structures will likely result in the risk of 'bird collisions and possible mortalities....That birds are colliding with towers has been well documented." Avatar Report, pages 3-19 and 3-20.

The Avatar Report further notes several sources estimating that mortality is between 2 million to 5 million birds per year, but ignores the letter (cited above and attached) to the FCC Chairman from the Director of the U.S. FWS dated November 2, 1999 where the Director references data that indicate the annual killing of migratory birds from communication towers is at least 4 million to an order of magnitude above this: 40 million birds. The Director points out the deficiencies in current FCC regulations that we have noted repeatedly before and notes that "....substantial losses of migratory birds are not being accounted for in FCC's permit and NEPA decision-making process."

The Avatar Report does conclude that "Although biologically significant tower kills have not been demonstrated in the literature, the potential does exist, especially for threatened and endangered species." Avatar Report, page 5-2. We believe that this submittal and previous submittals, coupled with the Longcore et al. Land Protection Partners Reports (2005) and Longcore et al. Land Protection Partners Analysis (2007) amply demonstrate that avian fatalities of certain bird species are biologically significant. See Longcore et al. Land Protection Partners Analysis (2007).

Over the years since 1998, the FCC Commissioners, the Commissioners' personal staff, and the staff of various FCC divisions have received extensive documentation of the past

and current killing of migratory birds at communication towers. This data has been provided to the FCC by the U.S. FWS, the undersigned, scientists, conservationists, and individual tower objectors, appellants, and declarants in tower appeal cases, and in a court suit, *In Re: Forest Conservation Council, Inc., et al., vs. FCC* in the U.S. Court of Appeals for the D.C. Circuit.

Accounts of bird kills at tall, lighted structures have appeared in North American scientific literature since at least 1880. The Avatar Report further details the extensive literature documenting avian mortality, sometimes numbering in the thousands in one night. Estimates by Dr. Albert Manville of the U.S. FWS indicate mortality at 4 million to 5 million birds annually, with the possibility of mortality an order of magnitude higher—40 million to 50 million. See Manville, A.M., II. 2001. *The ABCs of avoiding bird collisions at communication towers: next steps*. Pp. 85—103, 324, 330, in R.G. Carlton (ed.). Proceedings of Workshop on Avian Interactions with Utility and Communication Structures, December 2—3, 1999, Charleston, South Carolina. Electric Power Research Institute, Palo Alto, California. Manville, A.M., II. 2001. *Avian mortality at communication towers: steps to alleviate a growing problem*. Pp. 75—86, 227—228 in B.B. Levitt (ed.). Cell Towers: Wireless Convenience? or Environmental Hazard?: Proceedings of the Cell Towers Forum State of Science/State of Law, December 2, 2000, Litchfield, Connecticut.

For detailed bibliographies of avian fatalities at communication towers and other human built structures see:

Bird Kills at Towers and Other Man-Made Structures: An Annotated Partial Bibliography (1960-1998). This is an on-line bibliography created by the U.S. Fish and Wildlife Service's Office of Migratory Bird Management. It currently contains 125 citations, 83 of which have been published since 1980 and 24 of which are linked to Internet sites. This site has links to articles on tower kills in the popular press. Go to: <http://migratorybirds.fws.gov/issues/tower.html>

Two older annotated bibliographies on birds killed at man-made structures that were published in the late 1970s by the Canadian Wildlife Service (CWS) and the United States Fish and Wildlife Service (USFWS):

Weir, R.D. 1976. Annotated bibliography of bird kills at man-made obstacles: a review of the state of the art and solutions. Can. Wildl. Serv., Ont. Reg., Ottawa. 85 pp.

Avery, M.L., P.F. Springer, and N.S. Dailey. (1980). Avian mortality at man-made structures: An annotated bibliography (revised from 1978 ed.). U.S. Fish and Wildlife Service, Biological Services Program, National Power Plant Team, FWS/OBS-80/54.

A re-compilation of these references along with updated material is now available online from the California Energy commission's web site. Avian Collision and Electrocution: An Annotated Bibliography contains entries mainly from 1876 to 1992. Go to: http://www.energy.ca.gov/reports/avian_bibliography.html

The three scientists who prepared the Land Protection Partners report filed with the FCC in February 2005 have completed a new analysis and have submitted it to the FCC as part of this NPRM process. After an intensive literature review and statistical review by other top scientists of their previous Report, they now conservatively estimate an annual mortality from towers of at least –4.3 million birds per year, which is consistent with the current U.S. FWS estimate of at least 4 million to 5 million birds per year. They and other scientists plan to have this document published in a peer-reviewed journal. See again, Longcore, T. C. Rich, S.A. Gauthreaux Jr., B. MacDonald, and L.M. Sullivan. In preparation. *Is mortality of birds at communication towers biologically significant?* Note that the authors believe this is a very conservative estimate and they discuss this in their comments submitted on this NPRM.

The three authors of the LPP filings are Travis Longcore, Ph.D., Catherine Rich, J.D., M.A., and Sidney A. Gauthreaux, Jr., Ph.D. Ms. Rich and Dr. Longcore are co-editors of a book released in December 2005, *Ecological Consequences of Artificial Night Lighting*. Dr. Gauthreaux has been a pioneer in the use of DOPPLER weather radar to detect and estimate migratory bird numbers and movement. He has also conducted critical research at communication towers on lighting effects on birds. His study is cited and discussed in the LPP analysis as Gauthreaux and Belser, *Effects of artificial night lighting on migrating birds* in *Ecological Consequences of Artificial Night Lighting*, (2005).

In our comments submitted on February 14, 2005 to the FCC on the Avatar Report which was completed for the FCC to summarize the comments in the FCC Notice of Inquiry, *In the Matter of Effects of Communications Towers on Migratory Birds*, we submitted the Land Protection Partners Analysis that found that:

“Assessment of the cumulative significance of tower-caused avian mortality is confounded by the absence of monitoring at a large number of towers. Because the FCC does not require monitoring at towers that it registers or otherwise approves, and because tower operators do not conduct such monitoring, bird kills reported in the literature represent only a minimum measurement of the total mortality. The majority of tower sites are never checked for mortality and even those that are checked are done so only on a sporadic basis. In addition, the reported numbers are based on actual carcasses found and there is no extrapolation for predator/scavenger removal or search efficiency. This means, as the Avatar Report notes, that the numbers of birds killed are higher than reported. Two of the longer-term studies with periodic searches confirm that numbers of birds killed can be significant at one tower: a 38-year study of a single 1,000-foot television tower in west central Wisconsin documented 121,560 birds killed representing 123 species, and a 29-year study at a Florida television tower documented the killing of more than 44,000 birds of 186 species. Neither of these studies adjusted carcass counts upward to account for search efficiency and predator/scavenger removal. We do know that communications towers kill millions of birds annually, and that a very high percentage of these are neotropical migratory birds that migrate at night.”

If any one factor can be blamed for the inability to definitively document how many birds are killed at towers annually, it is the failure of the FCC to require monitoring for avian

mortality at communication towers, a flaw that still exists. Such monitoring is required for many of the wind turbine projects in the U.S., and carcasses found are adjusted upward for predator removal and searcher efficiency to derive more accurate numbers of bird fatalities. We agree with the Avatar Report that standardized monitoring needs to be established. The model cited from the wind energy industry is a good one.

Since the FCC does not require bird kill monitoring and since the telecommunication industry and tower owners/operators refuse to conduct or fund monitoring or research, how will such standardized protocols be implemented and where? The FCC should immediately require scientifically based monitoring for avian mortality at least at communication towers that are at least 500' AGL and open reporting of the results to cure this defect. Then the FCC can better ascertain the total mortality at towers under its jurisdiction. NEPA requires such analyses. Instead, the FCC uses the failure to document mortality at the vast majority of towers as an excuse for inaction, despite the scientifically documented incidences and studies of widespread avian mortality at towers.

The FCC now has before it not only extensive information that communication towers kill millions of migratory birds each year (at least 4.3 million), but that these birds are disproportionately neotropical migratory birds, the vast majority of which are night migrants. The FCC also has before it substantial evidence that at least 65 species of the 130 bird species that the U.S. FWS lists as Birds of Conservation Concern are killed at towers. See the Longcore et al. Land Protection Partners Reports (2005), Longcore et al. Land Protection Partners Analysis (2007), and see Shire, G.G., K. Brown, and G. Winegrad. 2000. *Communication towers: a deadly hazard to birds*. American Bird Conservancy, Washington, D.C (2000).

It is not simply the total overall numbers of birds killed at towers that is important. The FCC continues to imply that total mortality of all birds is the key factor in determining significance and adverse impacts. While total mortality of all birds is alarming and warrants action by the FCC, a critical factor in avian mortality at towers is the disproportionate number of individual birds killed of individual species, particularly species that are of conservation concern.

As noted above and as has been thoroughly documented from the literature, 65 species that the U.S. FWS lists as Birds of Conservation Concern are killed at towers. The U.S. FWS Birds of Conservation Concern list was mandated by Congress to "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation action, are likely to become candidates for listing under the Endangered Species Act of 1973." Fish and Wildlife Conservation Act of 1980, as amended. 16 U.S.C. §§2912 (a)(3). Hence, the 2002 list compiled by the FWS consists of migratory birds that the FWS believes are likely to become candidates for listing under the ESA unless conservation measures are taken. These species are either in substantial decline or are otherwise threatened by small or restricted populations, or are dependent on restricted or vulnerable habitats. It is of critical conservation concern that management actions be taken to conserve these listed avian species including at towers, and clearly the take of at

least one-half of these listed species at towers, particularly in the alarming and disproportionate numbers some are killed, warrants FCC action.

The Gehring and Kerlinger Reports on their Michigan research found at 42 species of birds at the 24 towers studied over five migration seasons (2003-2005), and that “Night-migrating songbirds collided most frequently with communication towers, accounting for about 92% of all carcasses found. (Appendix 1).” See Gehring, Joelle and Kerlinger, Paul, *Avian collisions at communication towers: I. The role of tower height and guy wires*, Prepared for: State of Michigan (March 2007). This data confirms previous long-term studies that conclude that more than 90% of bird fatalities are of night migrating neotropical songbirds.

In the Gehring and Kerlinger Report cited above, Blackpoll Warblers were the most common species found dead at towers in the fall of 2005. This species is a U.S. FWS Bird of Conservation Concern and is the 7th most commonly killed bird at communication towers. See Longcore et al. comments filed on this NPRM. Red-eyed Vireos and Ovenbirds were the two most common species found, also confirming other studies.

This disproportionate concentration of fatalities on neotropical, migratory birds during migration is further documented in the literature review and research in Shire, G.G., K. Brown, and G. Winegrad. 2000. *Communication towers: a deadly hazard to birds*. American Bird Conservancy, Washington, D.C (2000). The Land Protection Partners comments and analysis submitted in 2005 and further refined as submitted on this NPRM explicitly documents this disproportionate impact to warbler species (family Parulidae) and to other neotropical, migratory birds.

The Land Protection Partners scientists updated per species mortality estimates submitted on this NPRM are similar to the low estimates derived in their previous 2005 Report submitted to the FCC commenting on the Avatar Report. These lower estimates in 2005 were based on an assumption of 4 million annual bird fatalities.

These data document that it is not simply the overall gross number of birds killed at towers that is significant, but the disproportionately high numbers of birds killed in certain families and species, particularly U.S. FWS Birds of Conservation Concern.

The U.S. FWS reply comments submitted by Dr. Albert Manville to the FCC on the Avatar Report and dated March 9, 2005 note that: “LPP clearly characterized the issue of ‘biological significance’ to avifauna, especially based on 2003 comments to the NOI provided by the Cellular Telecommunications & Internet Association (CTIA), as an issue founded not on science but rather on a statutory standard under the National Environmental Policy Act (NEPA). We concur with this analysis. The Avatar Report, however, did not outline the standards used by the FCC to determine significance (LPP p. 4). LPP indicated that the report prepared for the communications industry by Woodlot Alternatives produced an annual estimate for avian mortality for all birds, not for particular species or populations (LPP p. 5). **The Service concurs that this is a flawed**

approach. Impacts must be assessed on a species-specific or population-specific basis. Emphasis added.

In the Gulf Coast petition filed with the FCC on August 26, 2002, details of U.S. FWS regional biologists' written concerns on tower impacts to migratory birds in the Gulf Coast region are cited. U.S. FWS letters citing these concerns were attached to the petition. As examples, within the Gulf Coast region of Louisiana, the U.S. FWS has been particularly concerned with the impacts of tower proliferation on migratory birds. On August 14, 2001, the U.S. FWS wrote to Aquaterra Engineering, Inc. that a proposed tower in Terrebonne Parish could potentially impact migratory birds "[g]iven its proposed location near the coast." The FWS letter went on to say that the FWS "is concerned that the number and distribution of existing towers, those currently authorized for construction, as well as the projected increase of such towers could potentially impact neotropical migratory birds," and provided risk criteria. See Exhibit N to the Petition.

These identical concerns and risk criteria were again raised regarding proposed towers by the U.S. FWS on April 4, 2001 in Rapides Parish and Washington Parish, Louisiana, April 11, 2001 in Vermilion Parish, and again on April 18, 2001 in East Baton Rouge Parish. See Exhibit O in the Petition. In yet another example, on March 9, 2001 (Exhibit P), the U.S. FWS wrote to GeoTrans, Inc. regarding two separate proposed towers in Duval County, Florida. The FWS letter states: "The proposed tower does not conform with our interim guidelines for communications tower siting, construction, and operation. The tower exceeds our recommended maximum height of 199 feet, and is located in an area used by coastal migratory birds and resident shorebirds and subject to fog, mist, and low ceilings. The proposed tower is immediately adjacent to an existing cellular communications tower. Although our guidelines recommend siting new towers within existing 'antenna farms' (clusters of towers), we believe the proposed clustered siting is not appropriate due to their potential cumulative impact on coastal migratory birds...Based on the above analysis, we believe that construction of an additional communications tower at the proposed site may cause mortality of migratory birds. When added to the general decline of neotropical migrants due to habitat loss and other factors, we consider any such potential mortality significant. We therefore do not concur with your finding of no significant impact. In addition, mortality of migratory birds caused by a cell tower may be a violation of the Migratory Birds Treaty Act."

In each of these correspondences, U.S. FWS has made its concerns apparent that the adverse direct, indirect, and cumulative effects of communications towers on migratory birds is a significant problem affecting migratory birds only to be ignored as the FCC requires no actions on these concerns and such towers are categorically excluded from NEPA review.

These are but a few examples of the many letters expressing local concerns of the U.S. FWS over tower construction. We have advised the FCC in the Gulf Coast petition that in light of these repeated warnings, FCC's consistently unlawful use of categorical exclusions to authorize over 99% of communications towers in the Gulf Coast region is especially egregious.

And, we have noted repeatedly, including above in section III, under NEPA the trigger for an EIS and mitigation and avoidance is whether Federal action significantly affects the quality of the human environment. 42 U.S.C. §4332(2)(C). Under 40 C.F.R. §1508.3 “federal agencies must conduct ~~an~~ IS for any action that “will or may” have a significant effect.” The FCC’s own regulations governing its implementation of NEPA specify that they “shall apply to all Commission actions that may or will have a significant impact on the quality of the human environment.” 47 C.F.R. § 1.1303. The killing of ~4.3 million birds, the vast majority of them neotropical night migrating birds protected under the MBTA, clearly constitutes a major federal action that will or may have a significant effect on the human environment. The cumulative impact of this killing over the years also triggers the full panoply of NEPA evaluations and protections.

And beyond the pure legal questions of what is a NEPA “significant effect” and whether 4.3 million annual avian fatalities at towers constitutes such a “significant effect”, previous and new filings submitted to the FCC document that bird kills at towers that fall disproportionately on certain species are **biologically significant** for these species. This goes well beyond the NEPA standard of “significant effect” and rises to a substantial threat to a number of protected migratory avian species.

In their filings in this NPRM, Longcore et al. Land Protection Partners Analysis (2007) conclude that at least 4.3 million birds are killed annually, at FCC registered towers and that under their conservative estimates, “Mortality of greater than 0.5% of total population annually for 20 species of conservation concern should be considered a biologically significant impact, because it represents additional mortality for species already in decline.” They end by noting that: “Such mortality is also likely to affect population trajectories because these species are already in decline. We therefore conclude the mortality of birds at towers is ‘biologically significant’We conclude that the magnitude of mortality of individual species of birds at communications towers constitutes a significant impact. both alone and as a cumulative impact in conjunction with other impacts, within the understanding of NEPA. In addition to the biological impact, this is a profound loss for the roughly 46 million Americans who watch and enjoy birds in their local environment;. Declines of migratory birds, from backyard species to less common migrants to rare and endangered species, diminish the human environment, and this should be recognized within the NEPA process as well. We also note that birds that collide with towers do not simply vanish into thin air, but can suffer devastating injuries and experience painful and potentially lingering deaths.”

As detailed in Section III (C) 1) above, the Longcore et al. analysis is very conservative as they base avian mortality on a total number of towers of 102,706 registered in the FCC Antenna Structure Registration Data System. The authoritative *Fryer’s Site Guide* in 2002 listed 170,087 towers, including 1,677 towers at a height of 1,000’ or higher. The FCC data base lists only, at most, 851 towers of 1,000’ AGL or higher. The significantly higher number of towers that exist in the U.S. as compared to those registered in the FCC data base means that the conservatively estimated annual death toll for migratory birds is **much higher** than Longcore et al. estimate.

Further, certain migratory species, including many of the U.S. FWS designated Birds of Conservation Concern, experience tower related mortality far out of proportion to their population size and are disproportionately killed at towers when compared to other species. This is amply demonstrated in the Land Protection Partners reports previously filed with the FCC and in their comments filed on this NPRM. The migratory period is believed to be the most critical period contributing to long-term declines in some species. See Hutto, R.K. 2000. *On the importance of en route periods to the conservation of migratory landbirds*. Studies in Avian Biology 20:109—114.

In a study to examine migration mortality, Sillett and Holmes examined Black-throated Blue Warblers, which are documented as being killed at communications towers (—59,000 per year) and is a U.S. FWS listed Bird of Conservation Concern. The researchers concluded that more than 85% of total mortality of Black-throated Blue Warblers occurred during migration. The long-term results confirmed concerns about the migratory period as playing an important role in species declines. Sillett and Holmes concluded: “Consequently, migrant populations could be especially susceptible to processes that further reduce survival of individuals during migration, such as destruction of high-quality winter habitats and stopover sites, **and increases in the number of communications towers along migration routes** (emphasis added).” Sillett, T.S., and R.T. Holmes. 2002. *Variation in survivorship of a migratory songbird throughout its annual cycle*. Journal of Animal Ecology 71:296—308.

According to the Land Protection Partners reports previously filed with the FCC and in their comments filed on this NPRM, extra mortality, such as the estimated 59,000 individuals per year of Black-throated Blue Warbler killed at towers, during a period that is already stressful, likely contributes to recorded regional population declines or even overall population declines for this Bird of Conservation Concern.

The U.S. FWS reply comments submitted by Dr. Albert Manville to the FCC on the Avatar Report and dated March 9, 2005 fully support the data in the Longcore et al. Land Protection Partners Analysis (2005). The U.S. FWS states that: “In Section 2.1 of the LPP Report, ‘Estimate of numbers of birds killed at towers by species,’ LPP took the list of the top 10 birds killed per year at communication towers, and estimated mortality for each species using the Service’s; low-end estimate of 4 million and high-end estimate of 40 million birds of all species killed per year. This novel approach, even at the 4-million bird level, results in some telling statistics. Looking only at the top 10 bird species for which mortality has been documented at communication towers, mortality is estimated to range from 490,000 to 4.9 million birds for each of the 10 bird species based on annual mortality estimates developed by FWS! The population impacts to migratory songbirds (and other avifauna) and impacts to their population status are frightening and biologically significant. LPP referenced the Sillett and Holmes (2002) long-term study on the migrant Black-throated Blue Warbler. The Sillett and Holmes study showed a survival rate during the migratory period of only 67-73%, compared to 99% (+ 1%) summer survival and 93% (+ 5%) winter survival, raising concerns about the increased number of communication towers and their impacts to this species during migration. For

Federally-listed species, such as the Kirtland's Warbler, whose total estimated population numbers only 2,000 breeding individuals, tower mortality could be significant to the entire population. We therefore concur with LPP's recommendation to include all migratory birds as part of the FCC's NEPA analysis process (LPP p. 5). The Service first raised this concern at our 1949 public workshop on avian collisions at communication towers, held at Cornell University."

The Longcore et al. filing in this NPRM documents that migratory warbler species (Parulidae) comprise 13 of the top 20 species for total mortality and 14 of the top 20 for proportion of the species killed annually. But species from other groups show surprisingly high mortality as a proportion of population size. For example, Pied-billed Grebes are the fifth most affected species by percentage of population size with an estimated 3.68% of total population killed per year. This estimate reflects mortality of Pied-billed Grebes at towers in eight Bird Conservation Regions.

These scientists have documented how tower kill is "biologically significant" for many species of birds, many of which are FWS Birds of Conservation Concern. They compared mortality estimates with estimates of total population size and this data documents that mortality at towers could conceivably reach 4% to 5% of total population size per year of some species. Mortality of this magnitude is extraordinarily significant on a species basis and for individual populations

Their data also documents 34 species for which annual tower kill is greater than 0.5% of population size. Of these 34 species, 20 are U.S. FWS Birds of Conservation Concern. The 0.5% is an arbitrary cut-off and lower mortality rates may affect population trajectories of species that are already impacted by other factors, hence their Birds of Conservation Concern listing. Mortality of this magnitude certainly significantly affects the quality of the human environment under NEPA, and such high mortality likely affects population trajectories.

Annual fatalities at towers documented for various birds are estimated per species by Longcore et al. Land Protection Partners Analysis (2007), and these species include 65 U.S. FWS Birds of Conservation Concern. Here are some of the mortality data for Birds of Conservation Concern. Those marked with an "*" are species for which at least 0.5% of their total populations are killed annually at towers:

151,122 Bay-breasted Warbled
97,091 Chestnut-sided Warblers*
87,397 Blackpoll Warblers
59,359 Black-throated Blue Warblers*
51,425 Black-throated Green Warblers*
46,631 Northern Waterthrushes
37,161 Yellow Warblers
36,527 Northern Parulas*
31,868 Yellow-throated Warblers*
27,786 Wood Thrushes
27,049 Marsh Wrens
19,315 Prairie Warblers*

18,995 Kentucky Warblers*
17,290 Dickcissels
17,269 Grasshopper Sparrows
16,769 Canada Warblers*
16,320 Yellow-hilled Cuckoos
15,255 Cape May Warblers
13,545 Sedge Wrens
11,940 Worm-eating Warblers*
11,454 Prothonotary Warblers*
10,730 Connecticut Warblers* and
10,414 Yellow-bellied Sapsuckers

See the Charts in Table 3 of the Longcore et al. comments filed in this NPRM.

In Longcore et al. Land Protection Partners Analysis (2007), the authors demonstrate that some populations of these Birds of Conservation Concern have very high estimated annual mortality at towers: Yellow Rails are at 17.5%; Bermuda Petrels are at 5%; Bay-breasted Warblers are at 4.8%; Swainson's Warblers are at 4.0%; Black-throated Blue Warblers are at 3%; Yellow-throated Warblers are at 2%; and Worm-eating warblers are at 1.6%. These are particularly alarming mortality data and are conservative estimates that are likely very much higher as the mortality estimates are based on the FCC's tower registration data base that has significantly less towers than exist.

The Bay-breasted Warbler (*Dendroica castanea*) is a U.S. FWS Bird of Conservation Concern and is a Audubon Watch List species, rated in the YELLOW category. This category includes those species that are declining but at a slower rate than those in the red category. These typically are species of national conservation concern. Each year, an estimated 151,122 Bay-breasted Warblers are killed at communication towers in the U.S. See the Longcore et al. filing in this NPRM. This is 5% of the Bay-Breasted Warblers total population.

A night migrating neotropical songbird, the Bay-breasted Warbler breeds across the vast boreal forests of Canada from the Northwest Territories to Newfoundland and the Maritimes and into northern New England. It migrates in fall to winter mostly from Costa Rica and Panama to northwestern South America. This means the this night migrating species makes two trips annually--north and south-- through a vast array of lit antenna structures under the jurisdiction of the FCC.

According to the Boreal Songbird Initiative "The Breeding Bird Survey indicates that its population is declining at nearly 7 percent per year, but the data are heavily skewed toward the eastern part of its range. This decline is likely a result of recent forestry practices on the breeding grounds that include spraying programs to control spruce budworm, planting of budworm-resistant trees, and shorter cutting cycles that eliminate the mature stands required for nesting. Problems occur on the migration routes and winter grounds as well. **Many migrating Bay-breasted Warblers are killed in collisions with towers and lighthouses.** Tropical deforestation is also a significant threat to this species,

which prefers mature forest across most of its winter range.”(Emphasis added). See, *Boreal Songbird Initiative* at:

www.borealbirds.org/birdguide/BD0590_species.shtml and Sauer, J.R., J.L. Hines, and J. Falcon. **2003**. *The North American Breeding Bird Survey, Results and Analysis 1966-2002*, Version **2003.1**, USGS Patuxent Wildlife Research Center, Laurel, MD.

Breeding Bird Survey data from **1966** through **2001** showed a **2.7%** annual decline in population; from **1980** through **2001**, the increase was more substantial (**6.6%**). In New Brunswick, estimates at Fundy National Park show that **20,000** pairs bred there in **1979**, but only **3,400** pairs bred there in **1992**. See the National Audubon Society’s watch List at: <http://audubon2.org/webapp/vuatchlist/viewSpecies.jsp?id=17>

The statement above that “many migrating Bay-breasted Warblers are killed in collisions with towers” is documented in the previous and current work that has been submitted to the FCC by Longcore et al. Land Protection Partners Reports (**2005**) and Longcore et al. Land Protection Partners Analysis (**2007**). The charts provided by LPP to the FCC show that fatalities each year at towers account for a conservatively estimated **151,122** Bay-breasted Warblers, an annual loss of 5% of the total population of this migratory songbird. The **151,122** fatalities ranks sixth for all bird species killed at towers.

We believe that such mortality adversely affects this Bird of Conservation Concern, a protected migratory species under the MBTA, and that this mortality is biologically significant and clearly constitutes a significant effect on the environment. This mortality alone requires FCC action to: complete an EIS under NEPA; to revise its environmental assessment requirements to require review of avian mortality impacts for each tower; add avian impacts to the list of EA requirements under **47 C.F.R. 1.1307**; adopt the prevention/avoidance measures in Section II above; and to act to prevent such fatalities as violations of the MBTA which prohibits any take of a migratory bird without a permit.

Similar cases could be made for 18 other U.S. FWS Birds of Conservation Concern for which towers take at least **0.5%** of their populations annually.

The Cerulean Warbler (*Dendroica cerulea*) is an example of the significant and adverse impacts to a bird species from tower kills to a bird species that is experiencing severe declines, even though **2,351** of these birds are killed at towers annually. In the Longcore et al. Land Protection Partners Analysis (**2007**), annual mortality **is** estimated at **2,351**. The Cerulean Warbler is one of 65 U.S. FWS Birds of Conservation Concern documented as being killed at antenna structures. The Cerulean Warbler also is Red-listed as Vulnerable to extinction by BirdLife International, the official Red List Authority for birds for the IUCN Red List. The Audubon Watch List accords the bird its highest concern—a RED listing. Species in this category are declining rapidly, have very small populations or limited ranges, and face major conservation threats. These typically are species of global conservation concern.

In the U.S. FWS comments on this NPKM, the FWS notes that “The birds most frequently killed include members of the warbler, thrush, and vireo families. In one case,

164 Cerulean Warblers — a FWS ‘species of conservation concern’ and a PIF Watch List ‘extremely high priority’ species — were reported collected at 5 towers.”

The Cerulean Warbler population has now dropped almost 82% throughout its U.S. range over the last 40 years, making it the fastest declining warbler in the country. See the data on the Cerulean Warbler in the October 31, 2000 ESA-listing petition, with a decline then estimated at 70%, at: http://www.southernenvironment.org/lawlibrary/forests/2000-31_cerulean_petition.pdf. And., see the U.S. FWS data at: www.fws.gov/Midwest/eco_serv/soc/birds/cerw/cerw12mnthfindnr.html.

Because of this severe population decline, 28 organizations filed a petition to list the Cerulean Warbler under the ESA with the U.S. FWS on October 31, 2000. The groups included the National Audubon Society, Defenders of Wildlife, Sierra Club, The Wilderness Society, Southern Appalachian Biodiversity Project, Cherokee Forest Voices, and the Southern Environmental Law Center. The FWS issued a preliminary finding in October 2002 that the petition had merit and launched a status review of the species.

When the FWS failed to act on the petition as required by the ESA, the groups sued the agency in February 2006 for repeatedly violating deadline requirements under the Act. In June, the FWS settled the case by promising to render a final decision by November 30, 2006. On December 6, 2006 the FWS denied the petition to list the bird but noted the serious population declines and declared the necessity of conservation measures to prevent its listing in the future and the pursuit of new initiatives to help the bird. These measures included: continued, long-term monitoring; assistance to the Cerulean Warbler Technical Group; development of partnerships in support of Service programs such as the Migratory Bird’s Cerulean Warbler Focal Species Strategy; and increased support of international conservation efforts.

The U.S. FWS noted: “Although there is no precise estimate of the current abundance of the cerulean warbler, the Service used a 1995 population estimate of 560,000 warblers during its review of the species’ status. Based on 40 years of data obtained through the Breeding Bird Survey which indicates the population is declining at about 3 percent each year, the estimated population in 2006 would be approximately 400,000. At this rate of decline, the Service estimates the cerulean warbler population would number in the tens of thousands 100 years from now.” And, thus, the bird was not in danger of extinction so as to warrant a listing under the ESA. See the U.S. FWS Press Release of December 6, 2006 that documents this information and also the formal publication of Cerulean Warbler data from the FWS at:

www.fws.gov/Midwest/eco_serv/soc/birds/cerw/cerw12mnthfindnr.html.

Ornithologists and other scientists disagreed with the decision to not list the Cerulean Warbler. “The birding community is greatly concerned because the Cerulean has been declining throughout its range for such a long period of time,” said Greg Butcher, Ph.D., Director of Bird Conservation and an ornithologist with National Audubon. He said the bird has declined an average of 6% per year over the last eight years, compared to an annual average of 4.3% from 1966 to 2004. See:

www.audubon.org/news/press_releases/Cerulean_Warbler_12_07_06.html.

Like many neotropical migratory birds, the Cerulean Warbler is a night migrant and undertakes a relatively long migration compared with many other birds, covering a distance of about 2,500 miles between the central latitudes of North America and northern latitudes of South America. The bird nests across eastern North America from the eastern Great Plains north to Minnesota, Ontario and Quebec, east to Massachusetts, and south to Louisiana. The core area of this warbler's breeding range is the Appalachian Mountain region of eastern Tennessee, eastern Kentucky, southern and western West Virginia, southeastern Ohio, and southwestern Pennsylvania.

Unfortunately, the bird must navigate through thousands of lit communication towers twice each year on its migration south and then, back north. While habitat loss is considered the key threat to this species, communication tower mortality is another factor contributing to its decline. At 2,351 Cerulean Warblers killed at towers a year, this mortality amounts to 0.59% of its total estimated population of 400,000. Such mortality is biologically significant when considering the annual decline over time of 3% in this warbler's population noted by the U.S. FWS. Ornithologists' estimate that the rate of population decline has increased to a 6% decline annually, making any human-caused artificial mortality at towers a serious conservation concern for a bird in serious decline. A 6% annual decline in a bird's annual population is alarming and the various factors causing such a precipitous decline need to be addressed to prevent the bird's ESA listing and eventual extinction. See the ESA-listing petition at: www.southernenvironment.org/lawlibrary/forests/2000-10-31_cerulean_petition.pdf.

The magnitude of tower mortality on an annual basis can be quite high for other individual species that are particularly vulnerable to tower fatalities in migration, but are not listed as Birds of Conservation Concern: 386,426 Red-eyed Vireos; 337,341 Ovenbirds; 295,130 Common Yellowthroats; 216,458 Magnolia Warblers; 171,938 Tennessee Warblers; 120,295 American Redstarts; 119,438 Swainson's Thrushes (Olive-backed Thrush); 108,443 Black-and-white Warblers; 100,224 Nashville Warblers; and 100,137 Gray Catbirds; 97,091.

Further, local populations of species may be adversely affected by impacts from tower kill while the species overall is stable. The data mentioned herein and submitted in detail in Longcore et al. Land Protection Partners Reports (2005) and Longcore et al. Land Protection Partners Analysis (2007) deals only with overall populations of bird species and does not estimate or document localized population effects because of the methodological difficulty of doing such geographical analysis.

All of the birds mentioned above that are killed at towers are protected under the MBTA and their take without a permit is unlawful. Clearly, these conservative annual mortality estimates trigger the full panoply of NEPA requirements and protections, as well as MBTA and ESA requirements as discussed above. There should be no dispute that the FCC antenna structure approval and registration process and program significantly affects the quality of the human environment under NEPA, 42 U.S.C. §4332(2)(C), and that an EIS is required for antenna structure approvals and registrations, individually or

cumulatively, that “will or may” have a significant effect” on the environment. NEPA, the MBTA, and ESA require FCC action to prevent, or at least minimize, this mortality.

Under current FCC rules and practice, tower construction projects that will have potentially significant adverse effects on non-endangered birds protected under the Migratory Bird Treaty Act, 10 U.S.C. § 703 et seq., are almost all wrongfully “categorically excluded” from environmental review by the FCC’s NEPA rules. 47 C.F.R. 51.1306. The FCC has severely abused its discretion by exempting these tower approvals and registrations. In a rule promulgated in 1986, the FCC declared that all FCC actions, decisions, licenses, permits, and renewals are “categorically excluded” from NEPA review unless the action falls into a few narrowly defined categories set forth in the regulations. See 47 C.F.R. § 1.1307 et seq.

Obviously, the FCC antenna structure approval and registration program has significant effects on migratory birds protected under the MBTA and the categorical exclusion should be ended. The data submitted herein and in other submissions, including those from the FWS and Longcore et al. Land Protection Partners Reports (2005) and Longcore et al. Land Protection Partners Analysis (2007), document that FCC tower registration decisions have significant effects on the human environment both individually and cumulatively by killing migratory birds, including endangered species and more than 65 species of Birds of Conservation Concern listed by the FWS. The FCC needs to act to end this categorical exclusion and adopt the measures suggested by the U.S. FWS Guidelines of September 2000 as detailed and refined in Section II above to prevent, or at least, minimize avian mortality while in no way impeding the provision of telecommunication services.

In Paragraph 2 of the NPRM, the FCC inquires as to the requirements for an EA on impacts to birds from towers and asks “is the evidence of specific incidents of bird collisions with towers, such as extrapolations that estimate the total number of these collisions, sufficient to support a required assessment for some or all towers? Are there other factors the Commission should consider in determining the proper treatment of the effect on migratory birds under the Commission’s environmental rules?”

We trust that we have responded to these inquiries through this document and again suggest that the measures detailed in Section II above be adopted by the FCC and that the FCC require tower owners/operators to assess avian mortality at towers that are more than 500’ AGL if it they employ red steady burning lights (FAA L-810) and other guyed and similarly lit towers. We also have delineated requirements above for applicants to review avian mortality impacts for each tower and for adding such impacts to the list of EA requirements under 47 C.F.R. 1.1307.

Finally, in Paragraphs 4 and 5 of the NPRM, the FCC inquires as follows and we further respond in **bold caps** after each (question:

“4. We also seek comment on what constitutes a significant effect on the human environment under NEPA in the context of effects on migratory birds. For example, does the death of some number of individual birds, without more, constitute a significant

environmental impact? SEE ABOVE DATA IN THIS SECTION AND THE DATA AND LEGAL PRESENTATION IN SECTION III ABOVE. Must the overall population of birds as a whole or of particular species be negatively impacted before any obligation under NEPA is triggered? OF COURSE NOT. SEE ABOVE DATA IN THIS SECTION AND THE DATA AND LEGAL PRESENTATION IN SECTION III ABOVE. And if so, what size of population, either in migratory birds as a whole or in a particular species, is sufficient to trigger any legal obligation by the Commission? SEE ABOVE DATA IN THIS SECTION AND THE DATA AND LEGAL PRESENTATION IN SECTION III ABOVE. Can the Commission rely upon anecdotal evidence of bird kills at individual towers or must it have broader studies before taking action specifically for the protection of migratory birds? EXISTING DATA IS NOT JUST ANECDOTAL AND IS MORE THAN SUFFICIENT TO REQUIRE THAT THE FCC TAKE ACTION. SEE DATA ABOVE IN THIS SECTION AND THE DATA AND LEGAL PRESENTATION IN SECTION III ABOVE. Must the Commission consider whether collisions with communications towers interrupt avian movement, and thereby result in declines in species beyond the direct losses due to collisions? IT SHOULD. SEE, E.G. LARKIN, R.P. AND B.A. FRASE. **1988. CIRCULAR PATHS OF BIRDS FLYING NEAR A BROADCASTING TOWER IN CLOUD.** JOURNAL OF COMPARATIVE PSYCHOLOGY **102:90-93.**

Also, what is the relevance, if any, of other causes of avian mortality, such as buildings, transmission lines, and vehicles? THESE OTHER FACTORS ARE NOT RELEVANT TO THE DUTIES OF THE FCC REGARDING AVIAN MORTALITY AT TOWERS,. SEE ABOVE DISCUSSION IN THIS SECTION AND IN SECTION III. AND NOTE THE NPRM COMMENTS FROM LONGCORE ET AL. "A COMPARISON OF THE CONTRIBUTION OF DIFFERENT MORTALITY SOURCES TO OVERALL BIRD MORTALITY IS NEITHER USEFUL NOR RELEVANT. SUCH COMPARISONS DO NOT PROVIDE ANY INFORMATION NECESSARY TO DETERMINE WHETHER MORTALITY IS BIOLOGICALLY SIGNIFICANT (I.E., NEGATIVELY AFFECT POPULATION TRAJECTORY OF POPULATIONS OF CONCERN)." THIS INQUIRY INTO OTHER SOURCES OF AVIAN MORTALITY **IS** WITHOUT MERIT AND IS AN INDUSTRY RED HERRING. THE KILLING OF MIGRATORY BIRDS AT 'TOWERS IS UNDER THE JURISDICTION OF THE FCC AND THIS KILLING REQUIRES THE FCC TO ACT UNDER NEPA, THE MBTA, AND UNDER THE ESA. THAT BIRDS ARE ALSO KILLED BY OTHER MEANS IS NOT RELEVANT TO THIS INQUIRY OR TO THE OBLIGATIONS OF THE FCC TO ACT UNDER NEPA, MBTA, AND THE ESA. THE SCIENTISTS-AUTHORS OF THE LAND PROTECTION PARTNERS ANALYSIS THAT WAS SUBMITTED WITH OUR NOI/AVATAR COMMENTS OF FEBRUARY 14, 2005, CONCLUDE THAT "EXPRESSING TOWER KILL MORTALITY AS A PERCENTAGE OF TOTAL HUMAN-INDUCED MORTALITY THEREFORE DOES NOT MAKE SENSE." How do the answers to these questions affect the Commission's authority, or obligation, to take action in this matter? THIS IS EXPLAINED THROUGHOUT THIS DOCUMENT.

5. The FCC seeks comment on whether the evidence concerning the impact of communications towers on migratory bird mortality justifies and/or authorizes Commission action under the Gulf Coast Petition filed by Forest Conservation Council, American Bird Conservancy and Friends of the Earth." OF COURSE THE

EVIDENCE DICTATES THAT THE FCC ACT. SEE THE PETITION AND SEE THE DATA ABOVE IN THIS SECTION AND THE DATA AND LEGAL PRESENTATION IN SECTION III ABOVE. WE ARE APPROACHING FIVE YEARS SINCE THE PETITION WAS FILED AND THE COMMISSION HAS DONE NOTHING TO BETTER PROTECT BIRDS FROM TOWERS SINCE ITS FILING. NOW, THE FCC SEEKS PUBLIC COMMENT ON THE PETITION AFTER CONDUCTING A NOTICE OF INQUIRY BEGINNING IN AUGUST OF 2003 AND RECEIVING DETAILED INFORMATION ON BIRD MORTALITY AT TOWERS, AND WHAT CAN BE DONE TO PREVENT IT.

We firmly believe that the research and data clearly establish that both the killing of at least 4.3 million primarily night migrating neotropical birds each year and the magnitude of mortality of individual species of birds at communications towers significantly affects the quality of the human environment under NEPA, both alone and as a cumulative impact year after year, and in conjunction with other impacts. We also firmly believe that annual losses in populations of 20 species of U.S. FWS Birds of Conservation concern in the 0.5%-5% range are biologically significant and are adversely affecting populations of these species. Clearly, the FCC is required to act under NEPA and under the MBTA and the ESA.

V. THE CAUSES OF AVIAN MORTALITY AT TOWERS AND THE SOLUTIONS THAT SHOULD BE ADOPTED BY THE FCC.

A) BACKGROUND: MEASURES TO PROTECT BIRDS WHILE NOT IMPEDING THE PROVISION AND BUILD-OUT OF TELECOMMUNICATION SERVICES.

The FCC NPRM posits detailed questions on what actions it might take if there is probative evidence of a sufficient environmental effect to warrant Commission action and whether scientific or technical evidence supports the adoption of requirements for communication towers regarding lighting, guy wires, tower height, the location of the tower, and the possibility of collocation. See NPRM, paragraphs 6 through 24.

The FCC NPRM also seeks comments on the adoption of an NEPA EA requirement for effects on migratory birds and on the types of towers to which such a requirement should apply. One possible approach might be to require an EA addressing this factor for all new tower construction or only for proposed towers that exhibit certain characteristics that render them more likely to harm migratory birds—towers that use certain lighting systems, or that require guy wires, or that exceed a specified height. See NPRM paragraphs 63 and 64.

Finally, in NPRM paragraph **65**, the FCC seeks comment on whether there are other possible substantive or procedural measures the Commission could take to minimize migratory bird collisions that are not discussed above.

In this section, we will answer the inquiries of the FCC in this NPRM related to preventing avian mortality at communication towers under its jurisdiction and how this

should be done under the antenna structure review, approval, and registration process. In this section, which augments the comments in the sections above, we will further advise the FCC how it can and should comply with NEPA through its antenna structure review, approval, and registration process and also, how it can and should comply with the MBTA and ESA. The scientific and technical evidence supporting these changes will be detailed.

Preliminarily, we must emphasize two critical points to the Commission:

First, the FCC must adopt measures not just for new tower applications coming before it, but also for lighting changes to prevent avian mortality at **existing** towers; and

Second, that all the measures and process changes suggested to bring the FCC into compliance with NEPA, MBTA, and ESA that will lead to the prevention of the killing of millions of birds at towers will not in any way adversely affect the provision and build-out of telecommunication services in this country and will have no adverse effects on the deployment of wireless services, on homeland security, and on public safety.

As to the first item above, we document later in this section the importance of lighting in attracting birds to towers at night and causing the vast majority of avian fatalities at towers. With the scientific evidence clearly demonstrating the linkage of red steady burning lights to avian fatalities, it is extremely important that the FCC act to prevent the use of such lighting for night time conspicuity on new towers, but to also require that existing towers that employ such lighting be modified.

As to item number two above, the FCC in its NPRM has requested comments on the effect of any new EA requirements and mitigation measures to prevent avian mortality on the deployment of wireless services, on homeland security, and on public safety and on the Commission's ability to administer any particular proposal if adopted. We note that all our proposals are required by NEPA, MBTA, and ESA and are suggested with a view to protecting avian species while not in any way impeding the provision and build-out of telecommunication services in this country and not adversely affecting the deployment of wireless services, homeland security, public safety, or small businesses.

While we elaborate on this below, as one example of measures to prevent avian mortality that will not adversely affect the provision and build-out of telecommunication services is the use of alternatives to red steady burning lights at night (L-810). Many towers already employ white strobes exclusively at night and others use red strobes or red blinking lights exclusively at night. The use of lighting systems other than red steady burning lights at night will in no way impede the provision and build-out of telecommunication services in this country and will not adversely affect the deployment of wireless services, homeland security, public safety, or small businesses.

Another example, is requiring the collocation of antenna to be pursued in lieu of new tower construction also will in no way impede the provision and build-out of telecommunication services in this country and will not adversely affect the deployment of wireless services, homeland security, public safety, or small businesses. In fact, the

nation's largest tower construction companies are already pursuing collocation, as are wireless providers. Collocation saves money.

Keeping towers, especially those under 500', as monopoles (where possible) to avoid guy wires is yet another example of a measure that will prevent many avian fatalities at towers that will in no way impede the provision and build-out of telecommunication services in this country and will not adversely affect the deployment of wireless services, homeland security, public safety, or small businesses. Of course, keeping towers as monopoles when under 500' can add to the cost of erecting such structures, but we support provisions wherein the applicant could submit certification by a qualified engineer that the structure cannot practicably be built as a monopole and that practicability be determined based on safety concerns, significantly higher costs, or due to other engineering factors that require the use of guy wires.

As we now turn to documentation of the measures that can be employed to prevent avian mortality at towers, or at least minimize such mortality, we must note that these measures have been repeatedly suggested to the FCC before. On September 14, 2000, the U.S. Fish and Wildlife Service issued its Guidance Document on the Siting, Construction, Operation and Decommissioning of Communications Towers. A copy of that document was provided the FCC in September 2000 and has been repeatedly discussed with the FCC since September 2000. The Towers and Birds NOI mentions these Guidelines. In issuing the Guidelines, the C.S. FWS Director repeated concerns that the "The construction of new towers creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. Communication towers are estimated to kill 4-5 million birds per year, which violates the spirit and intent of the Migratory Bird Treaty Act and CAR Part 50 designed to implement the MBTA. Some of the species are also protected under the Endangered Species Act and Bald and Golden Eagle Act."

The U.S. FWS Director noted that "These guidelines were developed by Service personnel from research conducted in several eastern, Midwestern, and southern states, and have been refined through Regional review. They are based on the best information available at this time, and are the most prudent and effective measures for avoiding bird strikes at towers. We believe that they will provide significant protection for migratory birds pending completion of the Working Group's recommendations. As new information becomes available, the guidelines will be updated accordingly."

On November 20, 2000, the U.S. FWS Director wrote to the FCC Chairman, attaching the Guidelines and urging the Chairman to "...make the interim guidelines available to all applicants requesting Federal communication licenses, in order to distribute the information more widely among the...industries." The Director noted that the Guidelines represent "the best measures available for avoiding fatal bird collisions" and "While there is a considerable body of research available on bird strikes at towers and the measures which can be taken to avoid them, this knowledge is not widely known outside the academic community....We believe that widespread use of these guidelines will significantly reduce the loss of migratory birds at towers."

The U.S. FWS reply comments submitted by Dr. Albert Manville to the FCC on the Avatar Report and dated March 9, 2005 fully support the data in the Longcore et al. Land Protection Partners Analysis (2005) supporting the FWS Guidelines and documenting the key roles of lighting and guy wires in tower mortality. The FWS comments recommend that: “The FCC should endorse the Service’s voluntary tower guidelines issued in 2000, strongly encouraging the industry to collocate antennas on existing structures while constructing shorter towers. These actions should not compromise communication needs.”

In the FCC NOI at page 14, the FCC notes that it is not expert in migratory birds, rather the FWS is the lead Federal agency for managing and conserving migratory birds. The FCC further acknowledges that the FWS undertakes a number of bird surveys with the Regional FWS offices. In 2000, the Director of the FWS, the Federal agency with this expertise in birds cited by the FCC, clearly states that the FCC should follow the FWS Tower Guidelines to prevent avian mortality at towers and the FWS reiterates the efficacy of these Guidelines to the FCC in 2005. The FWS formally states to the FCC in March 2005 that: “The population impacts to migratory songbirds (and other avifauna) and impacts to their population status are frightening and biologically significant”, but the FCC refuses to acknowledge this and requests information again on this same question. Despite the FCC acknowledgment of expertise on migratory birds in the U.S. FWS, the FCC has still not acted to acknowledge the significance of bird **kill** at towers and has refused to adopt the measures recommended by the FWS in the FWS Tower Guidelines, or to adopt any other measures to prevent avian *mortality* at towers.

The analysis from the federal agency with the statutory duty to conserve migratory birds and with the agency expertise on birds should be enough to trigger FCC action. We suggest that the FWS confirmation of the significance of bird kills at towers, the measures that can be employed to prevent these kills, the data herein and in the previous filings we have made, and the data and documentation submitted by the scientists at Land Protection Partners in 2005 and on this NPRM is more than sufficient for the FCC to finally act to adopt the measures in the FWS Tower Guidelines and the measures further detailed in Section II above.

We and other conservation and scientific groups have submitted detailed comments to the FCC on these same measures to avoid avian mortality at towers on many occasions over the last eight years. We submitted formal detailed comments to the FCC on November 11, 2003, commenting on the FCC Notice of Inquiry (NOI) on Migratory Bird Collisions with Communication Towers and Birds.

On February 14, 2005 we again submitted formal detailed comments on the Avatar Environmental, LLC Report that again documented the measures necessary to prevent avian fatalities at towers. Our comments were accompanied by a detailed Report completed by scientists at Land Protection Partners fully documenting and supporting these measures. We then submitted reply comments to the FCC on this Avatar Report matter on March 9, 2005, supplemented with another detailed Report completed by

scientists at Land Protection Partners. All of these filings documented avoidance and mitigation measures the FCC could take to resolve the bird kill problem. We are again providing copies of these documents to the FCC. The FCC has failed to adopt the measures suggested or any other measures to prevent avian fatalities.

We detail below with supporting documentation answers to the questions posited by the FCC in this NPRM regarding the adoption of measures to prevent avian mortality without in any way impeding the provision and build-out of telecommunication services in this country and without adversely affecting the deployment of wireless services, homeland security, public safety, or small businesses.

B) COLLOCATION AND STRUCTURE HEIGHT UNDER 200' AGL.

The NPRM inquires about adopting measures to require efforts to collocate new antennas, rather than building new antenna structures. Also, questions are posited regarding tower height.

We suggest that the FCC adopt a requirement in its antenna structure approval and registration program that states:

1) An applicant for an antenna structure shall submit a written declaration to demonstrate why there is no viable opportunity for co-location of an antenna and that they cannot practicably keep a tower structure under 200', thus avoiding lighting requirements in order to better protect migratory birds. The declaration shall contain documentation that other structures have been examined in a five mile radius of the proposed antenna structure and that these could not practicably be used for the new antenna and why they could not be used. The applicant for an antenna structure also shall submit a written declaration to document why a proposed new antenna structure could not be kept to a maximum height of less than 200' AGL to avoid lighting requirements.

2) An applicant for an antenna structure shall design all new towers structurally and electrically to accommodate the applicant's antenna(s) and comparable antennas for at least two additional users for a minimum of three users for each tower structure, unless this design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower.

The September 14, 2000 U.S. Fish and Wildlife Service Guidance Document on the Siting, Construction, Operation and Decommissioning of Communications Towers recommend as the first two measures to be employed to prevent avian fatalities:

1. Any company/applicant/licensee proposing to construct a new communications tower should be strongly encouraged to collocate the communications equipment on an existing communication tower or other structure (e.g., billboard, water tower, or building mount). Depending on tower load factors, from 6 to 10 providers may collocate on an existing tower.

2. If collocation is not feasible and a new tower or towers are to be constructed, communications service providers should be strongly encouraged to construct towers no more than 199 feet above ground level (AGL), using construction techniques which do

not require guy wires (e.g., use a lattice structure, monopole, etc.). Such towers should be unlighted if Federal Aviation Administration regulations permit.

The FWS Guidelines also provide that:

9. In order to reduce the number of towers needed in the future, providers should be encouraged to design new towers structurally and electrically to accommodate the applicant/licensee's antennas and comparable antennas for at least two additional users (minimum of three users for each tower structure), unless this design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower,

Requiring the collocation of antenna to be pursued in lieu of new tower construction will save money and in no way impede *the* provision and build-out of telecommunication services in this country. In response to shareholders' concerns for profit, some of the nation's largest tower construction companies are already pursuing collocation, as are the wireless providers.

The U.S. FWS reply comments submitted by Dr. Albert Manville to the FCC on the Avatar Report and dated March 9, 2005 support the research data in the Longcore et al. Land Protection Partners Analysis (2005). The FWS states that "In Section 3, 'Tower height affects bird mortality rate,' LPP analyzed the relationship between tower height and the number of avian fatalities. In Section 3.1, they then investigated the relationship between tower height (including lit and unlit towers) and bird deaths, resulting in a regression analysis of significance. As a result of their analysis, LPP concluded that towers lower than 200 feet, with no FAA obstruction lighting, provided a 90-95% reduction in bird mortality. This recommendation, coincidentally, parallels the Service's second voluntary recommendation made in 2000, for siting and constructing towers. That is, if communication antennas cannot be collocated on other structures, keep them unguyed, unlit, and under 200 feet."

In the updated Longcore et al. Land Protection Partners Analysis (2007) filed in this NPRM, the scientists/authors note that they extended and refined their investigation of the importance of tower height on avian mortality and conducted a new meta-analysis of communications towers that shows that

bird mortality is positively correlated with tower height. Their study uses annual mortality estimates

from 28 studies that met certain scientific criteria. They conclude that the taller a tower, the more likely it is to kill migratory birds. They state that: "The existing data would support the FCC adopting these recommendations as standards to better protect birds. Such standards for tower construction do not mean that towers exceeding 199 feet or any other height should not be constructed, only that the FCC would strongly encourage collocation and the construction of shorter towers to accomplish telecommunication goals while minimizing avian impacts." Their work on tower lighting and height has been submitted for publication as Longcore, T., C. Rich, and S.A. Gauthreaux Jr. In review. *Design and siting of communication towers and rate of avian mortality: a review and meta-analysis*

As the authors/scientists note in the NPRM comments: “The lighting scheme of communications towers is probably the most important factor contributing to bird kills at towers that can be controlled by humans....The results of our analysis are therefore consistent with the Gehring study and with surveys of bird kills after taller towers have been replaced with shorter towers. Crawford and Engstrom report decreased mortality following the reduction of a 1,008-foot tower to 284 feet. Furthermore, in instances where a taller tower has been erected next to a shorter tower, more birds are killed at the shorter tower than before, presumably because of the attracting effect of lights on the taller tower. Finally, the statistically significant relationship between tower height and bird mortality is consistent with studies of the vertical distribution of nocturnal migrants measured with radar. Most migrants fly at –1,500 feet, with a small proportion (2–15% in one study) below 300 feet during clear weather. Greater proportions of total migrants (26–46%, depending on the season and location) are found in the strata up to –1,300 feet, although the strength of radar used in that study may underestimate the number of birds at higher altitude.” See their references cited in their NPRM comments.

Therefore, we submit that based on the above, the FCC should adopt the requirements mentioned above to assure efforts to collocate new antennas, rather than build new antenna structures that may kill migratory birds, and to require efforts to keep new antenna structures at less than 200’ AGL to avoid lighting requirements. We concur with the scientists/authors of the Longcore et al. Comments on this NPRM that this does not mean all new antenna must be kept under 200’ AGL, or that all new antenna must be collocated. What we suggest is that the FCC adopt the new requirements that strongly encourage collocation and *the* construction of shorter towers to accomplish telecommunication goals while minimizing avian impacts. This can be achieved by requiring applicants to submit documentation as mentioned above. Tower applicants should also be required to design new towers structurally and electrically to accommodate the applicant antennas and comparable antennas for at least two additional users for a minimum of three users for each tower structure, unless this design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower.

Further, when new antenna structures are built under 200', they should be unlit and unguyed. These latter requirements are further discussed below.

C) LIGHTING REQUIREMENTS.

In this NPRM, the FCC has tentatively concluded “that under the Commission’s Part 17 rules, consistent with the FAA’s memorandum, the use of medium intensity white strobe lights for nighttime conspicuity is to be considered the preferred lighting system over red obstruction lighting systems to the maximum extent possible without compromising aircraft navigation safety. We base this tentative conclusion on the FAA’s recommendation of such lighting where it will not compromise aircraft navigation safety, the evidence suggesting that white strobe lights may create less of a hazard to migratory birds, and the absence of record evidence that use of white strobe lighting would have an adverse impact on communications facilities deployment. We seek comment on this tentative conclusion, including whether its implementation would result in reducing the

incidence of migratory bird mortality associated with communications towers as well as any burdens such a requirement would impose on tower owners, or on the public, and whether alternatives may be available or preferable. Should each new or altered registered antenna structure be required to use medium intensity white strobe lights for nighttime conspicuity if the FAA determines that the use of such lights would not impair the safety of air navigation and recommends their use?"

Preliminarily, it is important to discuss the various lights and lighting systems currently in use. The only reason obstruction lights are placed on structures is to provide for pilot warnings to prevent collisions with planes. Under FAA Advisory Circular (AC) 70/7460-1, Obstruction Marking and Lighting, pilot warning obstruction lights are recommended for any human-made obstruction that exceeds 200' AGL (above ground level) or that is within 3 nautical miles of an airport.

The nomenclature for various lights under FAA Advisory Circular (AC) 70/7460-1 is detailed and is as follows: L-810 lights are steady burning red lights; L-864 lights are flashing red incandescent lights and these lights can be incandescent, LED's, or strobes, and can flash at rates of from 20 to 40 flashes per minute; L-865 lights are medium intensity white flashing lights that flash at a rate of 40 flashes per minute as a strobe light. **All** of these lights are recommended for use on towers in the FCC Advisory Circular, and these recommendations include the use of both L-810 lights alternating on a tower structure with L-864 lights. This system has been commonly deployed on many of the tallest tower structures.

As is amply demonstrated below, it is the L-810 steady burning red lights that attract birds to towers and lead to the majority of avian fatalities. We note that the wind energy industry worked with the FAA and succeeded in commissioning a study of wind turbine lighting to prevent avian fatalities. The study was conducted by the FAA. The study results documented that the use of L-864 red strobe-like lights on the nacelle of a wind turbine (with no other lighting) provided full night time conspicuity for pilot warning. The study also demonstrated that not all turbines in a project need be lit. For example, the Mountaineer wind energy project in West Virginia has L-864 strobe-like lighting on 12 of 44 turbines. The L-864 red strobe-like lighting is on the nacelle, meaning there are no lights on the turbine blade when it is extended over the nacelle. Wind turbines at apogee can exceed 400'.

Despite the location of these turbines on the Appalachian ridges, avian fatalities have averaged less than 4.8 birds per turbine, and the recent study cited below, documents that because of the widespread use of these L-864 red strobe like lights, fatalities at 17 wind turbine projects indicated no more fatalities at lit vs. unlit turbines and that these lights, unlike red steady burning L-810 lights did not attract large numbers of birds.

Whenever white strobes are mentioned in this document, this refers to L-865 lights under FAA Advisory Circular (AC) 70/7460-1. When red steady burning lights are mentioned, this refers to L-810 lights under the FAA Advisory Circular. When red strobe lights are

mentioned, this refers to L-864 lights in a strobe flash, and red blinking incandescent lights refers to L-864 in a slower blinking fashion.

Next, we note that the FCC and industry have asserted from time to time that it is the FAA, not the FCC, that has authority on the tower lighting requirements, and that the regulatory authority rests with the FAA not the FCC. However, it is the FCC and not the FAA that imposes requirements for lighting these towers. Under 47 U.S. C. § 303(q) of the Communications Act, the FCC is empowered to “require the painting and/or illumination of radio towers if and when . . . such towers constitute . . . a menace to air navigation.” While the FAA makes lighting recommendations for aviation safety under FAA Advisory Circular (AC) 70/7460-1, Obstruction Marking and Lighting, it is the FCC that is authorized under statute and that in practice imposes the requirements for these lights. That is because the FCC has the statutory control over matters involving licensing of applicants, and the erection, approval, and registration of towers. 47 C.F.R. § 17.21; 17.23.

While the FAA has advisory standards for lighting tall structures for aviation safety, the law is clear that it is the FCC that has the statutory responsibility for communication tower approval, registration, and licensing of applicants and for any lighting requirements. 47 U.S. C. § 303(q) of the Communications Act and 47 C.F.R. § 17.21; 17.23. Under FCC procedures, an applicant for a new antenna structure must demonstrate to the FCC that they are using certain aviation safety lighting on all structures exceeding 200’ AGL.

In addition to the general licensing requirements for wireless and broadcast operators, FCC regulations also require any party seeking to construct or modify a communication towers that stands over 200’ in height to “register” the tower with the FCC before an applicant can obtain a construction permit or operation authorization under the normal FCC licensing process. 47 C.F.R. §§ 17.4; 17.5. These same regulations also require that the owners of all existing towers in excess of 200’ in height register such towers with the FCC, and certify that each tower displays appropriate lighting and complies with other technical standards. 47 C.F.R. §§ 17.4; 17.5. As part of the mandatory registration process, the FCC requires that towers exceeding 200’ display warning lights to meet aviation safety standards. 47 C.F.R. § 17.21; 17.23. While the FCC defers to the FAA Advisory Circular (AC) 70/7460-1, Obstruction Marking and Lighting, this Advisory Circular has a menu of choices for aviation obstruction lighting and the FCC can direct applicants and existing tower owners/operators to employ white (L-865) or red (**L-864**) strobe lighting and to avoid red steady burning lights (L-810) to protect birds while also providing full night time conspicuity for aviation safety.

The lighting employed on communication towers is of critical importance in causing avian fatalities. As noted by Longcore et al. in the LPP comments on this NPRM “The lighting scheme of communications towers is probably the most important factor contributing to bird kills at towers that can be controlled by humans.” The best science available indicates that particularly in poor visibility weather conditions at night, lights on towers (especially red steady burning L-810s) disrupt a neotropical migratory bird's